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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,694	04/28/2006	Yuri Gulevich	FE 6140 (US)	3706

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BASELL USA INC.
INTELLECTUAL PROPERTY
912 APPLETON ROAD
ELKTON, MD 21921

EXAMINER

CHOI, LING SIU

ART UNIT	PAPER NUMBER
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1713

MAIL DATE	DELIVERY MODE
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07/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/577,694

Applicant(s)

GULEVICH ET AL.

Examiner

Ling-Siu Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/03/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-10 are now pending, wherein claims 1-7 are drawn to a solid catalyst component; claims 8-9 are drawn to a catalyst for olefin polymerization; claim 10 is drawn to a process for olefin (co)polymerization in the presence of the catalyst.

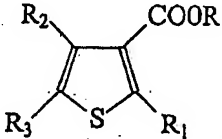
Claim Analysis

2. Summary of claim 1:

A solid catalyst component for the polymerization of olefins comprising	
A	Mg
B	Ti
C	halogen
D	<p>an electron donor selected from thiophene derivatives of formula</p> <div style="text-align: center;"> <p>The diagram shows a thiophene ring (a five-membered aromatic ring with one sulfur atom). The sulfur atom is at the bottom vertex. The top-left vertex is substituted with R₂, the top-right vertex with COOR, the bottom-right vertex with R₁, and the bottom-left vertex with R₃.</p> </div> <p>R a branched alkyl group</p> <p>R₁, R₂, R₃ hydrogen, halogen, R⁴, OR⁴, COOR⁴, SR⁴, NR⁴₂, or PR⁴₂, wherein R⁴ is a linear or branched C₁₋₂₀ alkyl, C₂₋₂₀ alkenyl, C₃₋₂₀ cycloalkyl, C₆₋₂₀ aryl, C₇₋₂₀ alkylaryl, or C₇₋₂₀ arylalkyl group, optionally containing at least one heteroatom, and at least two of heteroatoms R₁-R₃ groups can also be joined to form a cycle, with the proviso that <u>at least one of R₁ and R₂ is COOR⁴</u> and that when R₂ is COO-i-octyl and R is i-octyl, at least one of R₁ and R₃ are different from hydrogen.</p>

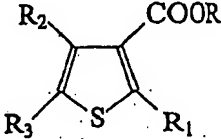
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Summary of claim 8:

A catalyst for the polymerization of olefins comprising	
A	a solid catalyst component comprising
	Mg
	Ti
	halogen
	an electron donor selected from thiophene derivatives of formula
	
R	a branched alkyl group
R ₁ , R ₂ , R ₃	hydrogen, halogen, R ⁴ , OR ⁴ , COOR ⁴ , SR ⁴ , NR ⁴ ₂ , or PR ⁴ ₂ , wherein R ⁴ is a linear or branched C ₁₋₂₀ alkyl, C ₂₋₂₀ alkenyl, C ₃₋₂₀ cycloalkyl, C ₆₋₂₀ aryl, C ₇₋₂₀ alkylaryl, or C ₇₋₂₀ arylalkyl group, optionally containing at least one heteroatom, and at least two of heteroatoms R ₁ -R ₃ groups can also be joined to form a cycle, with the proviso that <u>at least one of R₁ and R₂ is COOR⁴</u> and that when R ₂ is COO-i-octyl and R is i-octyl, at least one of R ₁ and R ₃ are different from hydrogen.
B	an alkylaluminum compound, and optionally
C	at least one electron-donor compound (external donor)

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Summary of claim 10:

A process comprising (co)polymerizing olefins in the presence of a catalyst comprising	
A	a solid catalyst component comprising
	Mg
	Ti
	halogen
	an electron donor selected from thiophene derivatives of formula
	
R	a branched alkyl group
R ₁ , R ₂ , R ₃	hydrogen, halogen, R ⁴ , OR ⁴ , COOR ⁴ , SR ⁴ , NR ⁴ ₂ , or PR ⁴ ₂ , wherein R ⁴ is a linear or branched C ₁₋₂₀ alkyl, C ₂₋₂₀ alkenyl, C ₃₋₂₀ cycloalkyl, C ₆₋₂₀ aryl, C ₇₋₂₀ alkylaryl, or C ₇₋₂₀ arylalkyl group, optionally containing at least one heteroatom, and at least two of heteroatoms R ₁ -R ₃ groups can also be joined to form a cycle, with the proviso that <u>at least one of R₁ and R₂ is COOR⁴</u> and that when R ₂ is COO-i-octyl and R is i-octyl, at least one of R ₁ and R ₃ are different from hydrogen.
B	an alkylaluminum compound, and optionally
C	at least one electron-donor compound (external donor)

Claim Rejections - 35 USC § 102

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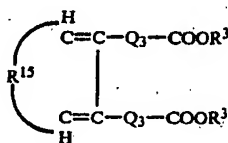
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kashiwa et al. (US 4,725,656).

Kashiwa et al. disclose a catalyst comprising (A) a magnesium-containing solid titanium catalyst component containing magnesium, titanium, a halogen and an electron donor, (B) an organoaluminum compound catalyst component, and (C) an outside electron donor which is an organic silicon compound, wherein the electron donor in the catalyst component (A) is a mono- or poly-ester of an aromatic polycarboxylic acid of the following formula



wherein R^{15} represents a divalent group which has at least one hetero atom selected from nitrogen and sulfur atoms and is selected from the group consisting of -S-, -S-CH₂-, -NH-, and -NH-CH₂-; Q_3 represents a direct single bond; R^3 represents a linear or branched alkyl group having 1 to 16 carbon atoms, preferably 2 to 8 carbon atoms, and at least one of the two R^3 in each formula is a linear or branched

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alkyl group having not less than 3 carbon atoms (col. 5, lines 11-38; claim 1). Thus, the present claims are anticipated by the disclosure of Kashiwa et al.

Conclusion

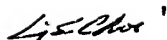
5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Tajima et al. (US 4,525,555).

Tajima et al. disclose a catalyst comprising (A) a solid catalyst component containing a solid substance and (4) a titanium compound supported on said solid substance, wherein the solid substance is obtained by contacting (1) a magnesium halide, (2) a silane, (3) at least one compound selected from the group consisting of: (a) $(R)_q(OR')_p-\Phi-(OH)_r$; (b) $P(OR^5)_3$; (c) oxygen-containing heterocyclic carboxylic acid esters; (d) nitrogen-containing heterocyclic carboxylic acid esters; (e) sulfur-containing heterocyclic carboxylic acid esters; (f) $R^6_tSi(OH)_{4-t}$; (g) $B(OR^7)_uX_{3-u}$; (h) $R^8_2SO_{w+1}$, and (i) N-substituted urethanes; (B) an organometallic compound; and (C) a silicon-containing compound, wherein the sulfur-containing heterocyclic carboxylic acid ester include methyl thiophene-2,3-dicarboxylate or ethyl thiophene-2,3-dicarboxylate (col. 7, lines 1-2; abstract). However, Tajima et al. do not teach or fairly suggest a solid catalyst for olefin polymerization, comprising Mg, Ti, halogen, and a specific thiophene having alkyl group of -COOR at 3 position to be a branched alkyl group and at least one of alkyl groups at 2 and 4 positions is -COOR.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114.



LING-SUI CHOI
PRIMARY EXAMINER

July 7, 2007